

RELICT OCCURRENCE OF THREE "AMERICAN" SCOLYTIDAE (COLEOPTERA) IN ASIA

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ABSTRACT.—The first non-American representatives of the bark beetle genus *Pseudopityophthorus*, of the subtribe Corthyline (Corthylini), and of the *Ips concinnus* species group are named. All are apparently relicts of an early faunal exchange with North America. The new taxa include: *Gnatharus*, new genus, and its type-species *Gnatharus tibetensis*, new species (Tibet); *Xenophthorus*, new subgenus, and its type-species *Pseudopityophthorus (Xenophthorus) peregrinus*, new species (Tibet), and *Ips orientalis*, new species (Tibet, China). The intercontinental exchange of other taxa in Scolytidae are also mentioned.

Faunal interchange between North America and Asia has been widely recognized ever since the discovery of America. Among the Scolytidae this has included the invasion of the Eurasian genus *Polygraphus* (about 45 species) into North America (3 species), *Phloeosinus* (40 Asian to 29 American spp.), *Cryphalus* (over 200 Asian to 3 American spp.), *Dryocoetes* (over 80 Asian to 7 American spp.), *Orthotomicus* (12 Asian to 1 American spp.), *Trypodendron* (12 Eurasian to 5 American spp.), etc. Migration in the opposite direction has included *Carphoborus* (21 American to 14 Eurasian spp.), *Scolytus* (over 60 American to 47 Eurasian spp.), *Pityophthorus* (over 300 American to about 35 Eurasian spp.), *Ips* (33 American to 18 Eurasian spp.), *Pityokteines* (6 American to 3 Eurasian spp.), etc. In each case anatomical and phylogenetic diversity in the invaded area is conspicuously less than in the area of origin such that no species group occurred in the invaded area that was not also present in the area of origin. More species groups in each genus always occurred in the area of origin than occurred in the invaded area.

In view of the above, it should be expected that additional examples of faunal exchange will be found. The Eurasian occurrence of *Dendroctonus micans* Kugelann, a geographical replacement species of the subpolar *D. punctatus* LeConte, in a genus that otherwise was exclusively American, has been known for almost a century. However, the discovery of

D. armandi Tsai & Li in China, with no allied sister species in America was surprising. Equally unexpected was the discovery that the species named from China as *Gretshckinia mongolica* Sokanovskii actually belongs to the American genus *Pseudothysanoes*, and, in fact, is the only representative of its tribe in Asia.

In a review of the Scolytidae of China, representatives of three additional groups thought to be exclusively American were found. The first is a previously unknown species of *Ips* that is allied to *I. concinnus* (Mannerheim). The second is an aberrant species of *Pseudopityophthorus*. The third is a previously unknown genus in the subtribe Corthyline, the first native species found outside of America. It is anticipated that additional relicts of an early faunal exchange will be found in both Asia and North America as the faunas become more completely known. These new taxa are described as follows.

Ips orientalis, n. sp.

This species is distinguished from the closely allied *concinnus* (Mannerheim) of western North America by the stouter body form, by the absence of a frontal fovea and tubercle, by the less deeply excavated elytral declivity, with the lateral margins less strongly elevated and the denticles smaller, and by the much more pronounced sexual dimorphism of the declivity.

MALE.—Length 4.4 mm (paratypes 3.5–4.4 mm), 2.3 times as long as wide; color dark reddish brown.

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Frons resembling *concinus* except tubercles distinctly smaller, particularly those on epistomal margin; central fovea entirely absent, median tubercle on epistomal margin and not larger than other tubercles. Antennal club with base significantly thicker and more corneous, sutures equally procurved.

Pronotum as long as wide, essentially as in *concinus* except discal area much shorter.

Elytra 1.3 times as long as wide, 1.4 times as long as pronotum; basic outline and structure as in *concinus* except stouter, discal punctures less numerous, larger, deeper, confused; declivity of same basic structure as *concinus* except much less strongly excavated, rather weakly explanate, lateral margins on upper half rounded, all denticles smaller and more broadly conical, 2 without a ventral carinate ridge extending toward 3. Vestiture about as in *concinus*.

FEMALE.—Similar to male except frons with a poorly formed central fovea about as in female *concinus*; elytral declivity with apical margin subacute, but not explanate, and not extending as far laterally; declivital excavation narrower and lateral margins not as high as in male.

TYPE LOCALITY.—Baxoi, Xizang (Tibet).

TYPE MATERIAL.—The male holotype, female allotype, and one male and two female paratypes are from Baxoi, Xizang (Tibet), 18-VIII-1973, *Picea*, Huang Fu-sheng. Two female paratypes are from Riowqe, Xizang (Tibet), 19-VIII-1976, same collector and host. One male and two female paratypes are from Barkam, Sichuan, 24-VII-1955, *Picea*, Qui De-xun. One male paratype appears to be from the type locality, taken 18-VI-1974. The holotype, allotype, and four paratypes are in the Institute of Zoology, Academia Sinica, five paratypes are in the Wood collection.

NOTES.—The discovery of this species is significant because it represents the first occurrence of this distinctive species group in an area outside of North America. Additional significance is found in the fact that it is by far the most primitive member of its group, and of *Ips*, and adds to the evidence that both *Ips* and *Orthotomicus* were derived from *Acanthotomicus*, and that the obliquely truncate antennal club of this tribe is not primitive in this tribe.

Pseudopityophthorus Swaine

The genus *Pseudopityophthorus* has consisted of 23 species from North and Central

America and one species from northern South America (Colombia). All bore in the phloem tissues of *Quercus* where they form characteristic transverse biramous parental tunnels. It was most surprising, therefore, to find a species in this uniquely American genus in Asia, also in *Quercus*. While this species is clearly allied to the first six species in my key (Wood, 1982, Great Basin Nat. Mem. 6: 966), it is thought appropriate to place it in a separate subgenus, based primarily on characters of the antennal club.

Xenophthorus, new subgenus.—Antennal club broadly oval, almost subcircular, sutures profoundly procurved, suture 1 attaining middle of club; anterior margin of pronotum not regularly serrate. Other characters as in primitive members of genus as described for the type-species.

Type-species.—*Pseudopityophthorus* (*Xenophthorus*) *peregrinus*, described below.

Pseudopityophthorus peregrinus, n. sp.

This species is distinguished from all other members of the genus by the very strongly procurved sutures of the antennal club, by the presence of striae punctures on both disc and declivity, by the long vestiture, and by other characters described below.

FEMALE.—Length 1.9 mm (paratypes 1.7–2.0 mm), 3.0 times as long as wide; color very dark brown.

Frons convex, a moderate transverse impression on lower third; surface reticulate-granulate, upper half and sides with sparse, rather coarse granules; vestiture sparse, rather long, hairlike. Antennal scape shorter than club, slender; funicle 5-segmented; club 1.17 times as long as scape, 1.17 times as long as wide, sutures broadly, very strongly procurved, marked by rows of setae, 1 extending slightly beyond middle of club.

Pronotum resembling *granulatus* Blackman except posterior areas more coarsely punctured and anterior margin unarmed except for about four irregularly placed serrations.

Elytra 1.8 times as long as wide, 1.5 times as long as pronotum; striae not impressed, punctures small; moderately deep, in rows, spaced by about diameter of a puncture; interstriae almost smooth and shining, three times as wide as striae, punctures feebly granulate, half as large as those of striae, uniseriate, as

closely spaced as strial punctures. Declivity steep, convex; striae continued to apex, punctures much smaller than on disc; interstriae very slightly shagreened, 1 weakly elevated, all with punctures replaced by small uniseriate granules. Vestiture consisting of short strial hair and long, coarse, pointed interstitial hair; each interstitial seta longer than distance between rows, up to twice as long on declivity.

TYPE LOCALITY.—Zayü, Xizang (Tibet).

TYPE-MATERIAL.—The female holotype and four female paratypes were taken at the type locality on 2-VIII-1973, from *Quercus*, by Huang Fu-sheng.

The holotype and two paratypes are in the Zoological Institute, Academia Sinica, two paratypes are in the Wood collection.

Gnatharus, n. g.

This genus is the only native member of the subtribe *Corthylina* to occur outside of America. Although aberrant in all characters, it appears most nearly allied to *Gnathotrupes* Schedl to which it is remotely related at best. The prothoracic precoxal flange resembles that of *Tricolus* Blandford.

DESCRIPTION.—Frons convex in both sexes, without special sculpture or ornamentation. Eye oval, finely faceted, more than one-third divided by an emargination. Antennal scape club-shaped, slightly shorter than club; funicle 4-segmented; club subcircular, with two rather strongly procurved sutures marked by both grooves and rows of setae. Pronotum sexually dimorphic, female much as in small *Gnathotrupes*, summit at middle, anterior slope strongly declivous and armed by numerous small asperities, very finely sculptured on posterior half, male weakly declivous in front, asperities largely obsolete, carinate anterior margin extended cephalad. Elytra simple, striae obsolete, declivity convex, rather steep, but suture divaricate from middle of declivity, elytra truncated before apex. Protibia in female inflated on posterior face and armed by numerous, confused tubercles; in male flattened, apparently unarmed (concealed from view); lateral margin armed almost to base.

TYPE-SPECIES: *Gnatharus tibetensis* Wood & Yin, described below.

Gnatharus tibetensis, n. sp.

This unique species has no near relatives. It is characterized as follows.

FEMALE.—Length 2.0 mm (allotype 1.7 mm, paratype 2.0 mm), 2.8 times as long as wide; color yellowish brown, with anterior half of pronotum and posterior half of elytra reddish brown.

Frons broadly convex on upper two-thirds, shallowly, transversely impressed, median line from impression to epistomal margin with a weak double-crested carina; surface strongly reticulate, punctures rather coarse, shallow, not close; vestiture of sparse, fine, short, inconspicuous hair. Eye and antenna as described for genus.

Pronotum 1.2 times as long as wide; sides straight and parallel on posterior two-thirds, broadly rounded in front; anterior margin broadly, almost weakly subcostate, serrations ranging from definite to indefinite, numerous; summit anterior to middle, anterior slope strongly declivous, armed by numerous rather small asperities; posterior areas strongly reticulate, punctures very fine, shallow. Vestiture of fine, short, rather sparse hair; anterolateral angles with a small tuft of longer hair as in some female *Gnathotrupes*. Procoxae contiguous, precoxal piece a simple, transverse partition bent (flanged) cephalad as in most *Tricolus*.

Elytra 1.7 times as long as wide, 1.3 times as long as pronotum; scutellum large, flat; sides almost straight and parallel on more than anterior two-thirds, rather broadly rounded behind except divaricate at suture and with a sublateral denticle; disc smooth shining, striae obsolete, punctures strongly confused, small, distinct, rather close. Declivity rather steep, convex, apex complex; sculpture as on disc; suture beginning to divaricate at middle of declivity, separation gradual and modest to lower fourth, then abruptly (almost 90 degrees) diverging and curving to meet costal margin in a subspinose point, distance between points equal to almost half of total elytral width. Vestiture of fine, short, rather abundant recumbent hair.

Tibiae wider than normal for tribe, meso- and metatibiae each armed by three socketed teeth, protibiae as described for genus.

MALE.—Similar to female except frontal carina with single summit; pronotum with

strongly formed, slightly produced anterior costa (serrations almost obsolete), anterior slope much more gradual, asperities greatly reduced in size, without special tufts of hair on anterolateral angles; posterior face of protibia flat and unarmed.

TYPE-LOCALITY.—Mêdog, Xizang. (Tibet).

TYPE-MATERIAL.—The female holotype, male allotype, and one female paratype were taken at the type locality on 8-IX-1974, 1400 m, from a *Castenopsis* by Huang Fu-sheng.

The holotype and allotype are in the Zoological Institute, Academia Sinica, the paratype is in the Wood collection.